

REMARKS

Claims 1-21 are in this application and are presented for consideration.

The independent claims have been rejected as being obvious over Bahr (US 2001/0017134) in view of applicant's admission of prior art.

The rejection states that it would have been obvious to substitute a contactless-type interface as admitted by applicant for the contact-type interface of Bahr '134, wherein doing so would amount to the mere substitution of one type of signal interface for another that would work or function equally as well. The Examiner refers to KSR International Co. v. Teleflex Inc., 550 US.-, 82 USPQ2d 1385 (2007) for further support of Examiner's position.

KSR reiterates that the framework for determining obviousness is stated in Graham v. John Deere Co. and the factual inquiries are as follows:

- (1) determining the scope and content of the prior art;
- (2) ascertaining the differences between the claimed invention and the prior art;
- (3) resolving the level of ordinary skill in the pertinent art.

The rejection uses Bahr and applicant's admission of prior art to determine the scope and content of the prior art. The rejection states that the difference between the claimed invention and the prior art is that Bahr does not disclose a contactless-type interface. The level of ordinary skill in the pertinent art does not appear to be fully addressed. The pertinent art of the present invention, and of Bahr is medical breathing respirators. Applicant's admitted prior art states that contactless interfaces are well known in the electrical engineering arts. It has not been shown that a person of ordinary skill in the pertinent art of Bahr and the present invention

would be familiar with the electrical engineering arts. A person of ordinary skill in the art of medical breathing respirators, has not been shown to be of sufficiently high level to substitute a contactless interface for the contact type interface of Bahr.

The art of medical breathing respirators is concerned with different gases that can be administered to patients, the concentration of those gases, and the flow characteristics of those gases. In particular, the person of ordinary skill is concerned with the gases of nitrogen, oxygen, percent water vapor/humidity, and the pressure, volume, temperature, and frequency at which the gases are delivered. This person of ordinary skill does not have a high skill level in the electrical engineering arts.

While contact interfaces are relatively simple, contactless interfaces are much more complicated and require a higher level of electrical engineering technology. The present application discloses two types of contactless interfaces, inductive and infrared. Inductive interfaces require knowledge of magnetic fields, in particular the behavior of rapidly varying magnetic fields, and their interaction with electrically conductive and nonconductive materials. Infrared interfaces require knowledge of electromagnetic waves, such as light waves and radio waves. A person skilled in the art of electrical engineering would be familiar with the technology behind inductive and infrared contactless interfaces.

However a person skilled in the art of medical breathing respirators would not be expected to know this technology, and this technology is not necessary for the practice of medical breathing respirators. Therefore the level of ordinary skill in the art of medical breathing respirators is not sufficient to realize that inductive and infrared contactless interfaces

exist, or that such contactless interfaces could be substituted for a contact interface.

To the person of ordinary skill in the art of medical breathing respirators, especially one who is familiar with contact type connections or interfaces, the technology behind a contactless interface would initially appear to be impossible. The technology required to generate and receive the rapidly varying magnetic fields in an inductive contactless interface, or to generate and receive the infrared electromagnetic waves in an infrared contactless interface, would be well beyond the level of ordinary skill in the art of medical breathing respirators. Because this technology is so far beyond the level of ordinary skill in medical breathing respirators, the operation of a contactless interface would almost appear to be magical. Because the person of ordinary skill in the art of medical breathing respirators has very little, if any, knowledge of contactless interfaces, it would not be obvious to make the substitution described in the rejection. When the level of one of ordinary skill in the art of medical breathing respirators is considered with respect to contactless interfaces in the electrical engineering art, the rejection becomes untenable. The independent claims therefore are not obvious in view of the applied art.

Applicant notes that in the office action of October 12, 2006, the inductive type of contactless interfaces are questioned with regard to being adequately disclosed. Applicant has since overcome this rejection by showing that inductive type contactless interfaces are known in the art of electrical engineering. The Examiner's questioning of inductive type contactless interfaces, is indicative that the level of a person of ordinary skill in the art is not sufficient to be familiar with contactless interfaces. Without knowledge of contactless interfaces, it would

not be obvious for a person of ordinary skill in the medical breathing respirator art to make the substitution stated in the rejection.

It is only the present application which makes the connection between a problem in the medical breathing respirator art, and a solution in the electrical engineering art. Before the connection made by the present application, those of ordinary skill in the medical breathing respirator art did not have the knowledge that a contactless interface from the electrical engineering art would solve a problem with medical breathing respirators. Likewise those skilled in the electrical engineering arts had no knowledge that a contactless interface would solve a problem with medical breathing respirators. Because it is only the present application which has introduced contactless interfaces to solve a particular problem of medical breathing respirators, the combination set forth in the claims is not obvious. The claims therefore define over the applied prior art.

A contactless interface is much more complicated than a contact interface. A contactless interface needs structure to generate a contactless signal that will propagate across a non-electrical material, and also needs structure to receive this contactless signal. As an example, structure would be needed to either generate a varying electric field, a varying magnetic field, a combination of both, and/or an optical signal. While structure for generating and receiving such contactless signals is well known in electrical engineering arts, the structure itself is much more complicated than a contact type connection, and would not be well known to person of ordinary skill in medical breathing respirators. To convert a regular signal from, and into, a contactless signal requires a significant amount of effort and knowledge that is just

not part of the level of skill of the ordinary person in medical breathing respirator art. Therefore a person of ordinary skill would not be led to substitute a contactless interface for a contact interface.

It is only the present applicant who discloses discovers that a contactless interface could be beneficially applied to a problem in a medical breathing respirator. This problem is disclosed in the present specification in paragraph 5. In particular, applicant has discovered that when the breathing tubes are regularly sterilized or disinfected, contact interfaces can degrade. Furthermore, repetitive use of the breathing tube with a contact interface can cause the contacts to wear down. This limits the usefulness of prior art breathing tubes such as a Bahr. The prior art of Bahr does not recognize these disadvantages of contact interfaces, especially in respiratory devices. It is only the present applicant who has sought to improve respirators with sensors at the distal end of a breathing tube, and who has discovered that the contact interfaces of the breathing tubes and sensors have disadvantages which limit the useful life of the breathing tubes and corresponding sensors. Furthermore, it is only the present applicant who provides a solution to the discovered problem of contact interfaces in breathing tubes.

A person of ordinary skill in the medical breathing respirator art would have no indication from Bahr that the contact type interface has a disadvantage. Therefore this person of ordinary skill would have no reason to replace the contact interface with a contactless interface. The person of ordinary skill would have no idea that such combination would be possible, or why such a combination would be beneficial. It is only the present application which has discovered the problem of contact type interfaces and has disclosed a solution.

The courts have decided “[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the ‘subject matter as a whole’ which should always be considered in determining the obviousness of an invention under 35 U.S.C. § 103.” In re Sponnoble, 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA 1969). Therefore since the prior art has not discovered the problem, and there is no indication that a contactless interface would correct the problem, the present claims can not be obvious in view of the prior art. The rejection is therefore untenable and overcome.

If the Examiner has any comments or suggestions which would further favorable prosecution of this application, the Examiner is invited to contact applicant's representative by telephone to discuss possible changes.

At this time applicant respectfully requests reconsideration of this application, and based on the above amendments and remarks, respectfully solicits allowance of this application.

Respectfully submitted
for Applicant,


By: _____
Theobald Dengler
Registration No. 34,575
McGЛЕW AND TUTTLE, P.C.

TD:tf
71163-11

DATED: January 15, 2008
BOX 9227 SCARBOROUGH STATION
SCARBOROUGH, NEW YORK 10510-9227
(914) 941-5600

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